



Conrado Rillo Millán

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Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

Los conocimientos adquiridos durante mi formación en materias como la física del estado sólido, la termodinámica y la electrónica, me han permitido abordar problemas experimentales y tecnológicos muy diversos en las áreas de ciencia de materiales e instrumentación electrónica para bajas temperaturas. Cabe destacar: i) numerosos trabajos experimentales de caracterización de materiales magnéticos y superconductores mediante instrumentación desarrollada específicamente para ello, destacando un proyecto de transferencia sobre magnetismo industrial aplicado al apantallamiento de cables de señalización de trenes AVE, con la empresa Cables de comunicaciones; ii) el desarrollo y transferencia a un centro metrológico nacional (TPYCEA) de los patrones cuánticos eléctricos basados en el efecto Josephson y Hall cuántico; iii) el diseño y test de criostatos e imanes superconductores para almacenamiento de energía (ASINEL-Red eléctrica-UNESA, ANTEC) y aceleradores de partículas (Duro Felguera-CERN(LHC)). Siendo el helio líquido un ingrediente esencial para todos mis estudios, y dada su escasez y elevado coste, en la última década he centrado mi trabajo en: iv) el desarrollo de nuevas técnicas de recuperación, purificación y licuefacción de helio adaptables a hospitales y centros de investigación. La nueva tecnología, protegida con siete patentes, y licenciada a la empresa Quantum Design International (<http://www.qdusa.com/products/helium-liquefiers.html>) se está implantando en hospitales y laboratorios de todo el mundo. Como colofón a estos últimos desarrollos se ha resuelto un problema global, producido por concentraciones de impurezas de hidrógeno molecular en helio, inferiores a 1:109, lo que ocasionaba enormes pérdidas económicas en hospitales y laboratorios de todo el mundo.



Conrado Rillo Millán

Surname(s): **Rillo Millán**
Name: **Conrado**
ORCID: **0000-0002-5710-5562**
Contact aut. region/reg.: **Aragon**

Current professional situation

Employing entity: Instituto de Nanociencia y Materiales de Aragón (INMA) **Type of entity:** University Research Institute

Professional category: Director

Start date: 25/03/2021

Type of contract: Civil servant

Dedication regime: Full time

Performed tasks: Director desde 25/03/2021. Breve descripción, por medio de palabras claves, de la especialización y líneas de investigación actuales: Física de Bajas Temperaturas. Propiedades Magnéticas, Eléctricas y Térmicas de Materiales. Magnetismo Industrial. Criogenia. Nuevas técnicas de recuperación, purificación y licuefacción de Helio.

Identify key words: Physics chemical and mathematical

Previous positions and activities

	Employing entity	Professional category	Start date
1	Instituto de Nanociencia y Materiales de Aragón (INMA)	Director en Funciones	17/07/2020
2	Instituto de Ciencias de Materiales de Aragón (ICMA)	Director en Funciones	14/02/2020
3	Servicio de Apoyo a la Investigación (SAI)- Universidad de Zaragoza	Director de División de Caracterización Física y Química	2012
4	Servicio de Apoyo a la Investigación (SAI)- Universidad de Zaragoza	Responsable del Servicio de Líquidos Criogénicos	2002
5	Universidad Zaragoza	Responsable Servicio de Instrumentación Científica	1984
6	Consejo Superior de Investigaciones Científicas	E. Profesor de Inves. CSIC GR A I	27/07/2002
7	Consejo Superior de Investigaciones Científicas	E. Investigador Científico del CSIC GR A I	04/03/1992
8	Consejo Superior de Investigaciones Científicas	E.Científico Titular del CSIC GR A I	01/02/1987
9	C.N.R.S.-U.J. Fourier. Grenoble (Fr)	Maitre de Conferences	1989
10	Universidad de Zaragoza	Profesor Tercer Ciclo	1986
11	Universidad Zaragoza	Profesor Ayudante Clases Prácticas	1984
12	Universidad Zaragoza	Becario de Investigación	1984
13			01/12/2011



	Employing entity	Professional category	Start date
	Consejo Superior de Investigaciones Científicas	E. Profesores de Investigación de organismos públicos de investigación GR A I	

- 1** **Employing entity:** Instituto de Nanociencia y Materiales de Aragón (INMA)
Professional category: Director en Funciones
Start-End date: 17/07/2020 - 25/03/2021
- 2** **Employing entity:** Instituto de Ciencias de Materiales de Aragón (ICMA)
Professional category: Director en Funciones
Start-End date: 14/02/2020 - 16/07/2020
- 3** **Employing entity:** Servicio de Apoyo a la Investigación (SAI)- Universidad de Zaragoza
Professional category: Director de División de Caracterización Física y Química
Start-End date: 2012 - 2019
- 4** **Employing entity:** Servicio de Apoyo a la Investigación (SAI)- Universidad de Zaragoza
Professional category: Responsable del Servicio de Líquidos Criogénicos
Start-End date: 2002 - 2019
- 5** **Employing entity:** Universidad Zaragoza **Type of entity:** University
Professional category: Responsable Servicio de Instrumentación Científica
Start-End date: 1984 - 2019
- 6** **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: E. Profesor de Inves. CSIC GR A I
Start-End date: 27/07/2002 - 01/12/2011
- 7** **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: E. Investigador Científico del CSIC GR A I
Start-End date: 04/03/1992 - 26/07/2002
- 8** **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: E.Científico Titular del CSIC GR A I
Start-End date: 01/02/1987 - 03/03/1992
- 9** **Employing entity:** C.N.R.S.-U.J. Fourier. Grenoble (Fr)
Professional category: Maitre de Conférences
Start-End date: 1989 - 1989 **Duration:** 6 months
- 10** **Employing entity:** Universidad de Zaragoza
Professional category: Profesor Tercer Ciclo
Start-End date: 1986 - 1987
- 11** **Employing entity:** Universidad Zaragoza **Type of entity:** University
Professional category: Profesor Ayudante Clases Prácticas
Start-End date: 1984 - 1986



- 12** **Employing entity:** Universidad Zaragoza
Professional category: Becario de Investigación
Start-End date: 1984 - 1985

- 13** **Employing entity:** Consejo Superior de Investigaciones Científicas
Professional category: E. Profesores de Investigación de organismos públicos de investigación GRA I
Start date: 01/12/2011
Type of entity: State agency



Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

University degree: Higher degree

Name of qualification: Licenciado en C. Físicas

Degree awarding entity: Universidad de Zaragoza **Type of entity:** University

Date of qualification: 1982

Doctorates

Doctorate programme: Doctor en C. Físicas

Degree awarding entity: Universidad de Zaragoza **Type of entity:** University

Date of degree: 1986

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
Dutch	B2	B2	B2	B2	B2
French	C2	C2	C2	C2	C2
English	C2	C2	C2	C2	C2

Teaching experience

General teaching experience

- 1 Name of the course:** Formación Personal Técnico de Infraestructuras
University degree: PTA2016-12446-I
Start date: 01/11/2017 **End date:** 30/11/2020
Entity: Universidad Zaragoza
Faculty, institute or centre: Facultad de Ciencias
Department: Servicio de Líquidos Criogénicos
City of entity: Zaragoza, Spain
- 2 University degree:** Categoría de Técnico Superior de Actividades Técnicas y Profesionales. Grupo 3 (INAEM)
Start date: 01/12/2013 **End date:** 28/05/2018
City of entity: Zaragoza, Spain



- 3** **Type of teaching:** Official teaching
Name of the course: Criogenia y líquidos criogénicos. Principios Básicos
Professional category: Personal técnico de laboratorios
Start date: 03/05/2011 **End date:** 09/05/2011
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 20
Entity: Universidad de Zaragoza
Faculty, institute or centre: Facultad de Ciencias
City of entity: Zaragoza, Spain
- 4** **Type of teaching:** Unofficial teaching
Name of the course: Criogenia y líquidos criogénicos. Formación General
Professional category: Personal de Administración y Servicios
University degree: Sección de Formación de PAS, Universidad de Zaragoza
Start date: 27/10/2008 **End date:** 24/10/2008
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 5
Entity: Facultad de Ciencias, Universidad de Zaragoza **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias
City of entity: Spain
- 5** **Type of teaching:** Unofficial teaching
Name of the course: Criogenia y líquidos criogénicos. Principios Básicos y Aplicaciones
Professional category: Personal técnico de laboratorios
University degree: Sección de Formación de PAS, Universidad de Zaragoza
Start date: 20/10/2008 **End date:** 24/10/2008
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 20
Entity: Universidad de Zaragoza
Faculty, institute or centre: Facultad de Ciencias
City of entity: Zaragoza, Spain

Experience supervising doctoral thesis and/or final year projects

- 1** **Project title:** New cryocooler-based helium liquefaction and purification techniques
Type of project: Doctoral thesis
Co-director of thesis: Conrado Rillo Millán; Javier Sesé
Entity: Universidad de Zaragoza **Type of entity:** University
City of entity: Zaragoza, Spain
Student: Miguel Gabal Lanau
Obtained qualification: Sobresaliente cum laude
Date of reading: 02/12/2016
- 2** **Project title:** Cryogenic Current Comparators with Optimum SQUID readout
Entity: Facultad de Ciencias Universidad de Zaragoza
Student: Elena Bartolomé Porcar
Date of reading: 2002



- 3** **Project title:** Optimización del Patrón cuantico de Resistencia. Corriente de ruptura del efecto Hall cuántico. Superconductividad aplicada a los comparadores de corriente
Entity: Facultad de Ciencias Universidad de Zaragoza
Student: Javier Sesé Monclús
Date of reading: 1999
- 4** **Project title:** Estudio de la distribución de corrientes de apantallamiento y de transporte en superconductores granulares y su aplicación en el diseño de un magnetómetro con sensor superconductor
Entity: Facultad de Ciencias Universidad de Zaragoza
Student: Luis Giordano
Date of reading: 1998
- 5** **Project title:** Optimización de un Sistema Inductivo de Caracterización Magnética
Entity: Facultad de Ciencias Universidad de Zaragoza
Student: Jorge Fernandez Liesa
Date of reading: 1998
- 6** **Project title:** Thermo-mechanical study and optimization of vertical vapour shielded cryostats for SMES Applications. Design of components for the main LHC cryostat
Entity: Facultad de Ciencias, Universidad de Zaragoza **Type of entity:** University
Student: Guillermo Peón Hernandez
Date of reading: 1997
- 7** **Project title:** Metrología Cuántica Eléctrica: Patrón de resistencia basado en el efecto Hall cuántico, Patrón de voltaje basado en el efecto Josephson
Entity: Facultad de Ciencias Universidad Zaragoza
Student: Agustín Camón Lasheras
Date of reading: 1996
- 8** **Project title:** Perfiles de flujo magnético en SAT cerámicos. Aproximación de estado crítico
Entity: Facultad de Ciencias, Universidad de Zaragoza
Student: Luis Alberto Angurel Lamban
Date of reading: 1993
- 9** **Project title:** Propiedades magnéticas macroscópicas de superconductores de alta temperatura crítica
Entity: Facultad de Ciencias, Universidad Zaragoza **Type of entity:** University
Student: Francisco Lera García
Date of reading: 1990
- 10** **Project title:** Instrumentación electrónica de magnetómetros SQUID-DC multicanal para investigación en biomagnetismo
Entity: Centro Politécnico Superior **Type of entity:** University Centres and Structures and Associated Bodies
Student: Abelardo Martínez Iturbe
Date of reading: 1989



Student tutorials

- 1 **Name of the programme:** Mobility programme
Entity: Comité Español para el intercambio de Estudiantes Técnicos- IAESTE
City of entity: Zaragoza, Spain
Number of tutored students: 1
Type of entity: University
- 2 **Name of the programme:** Mobility programme
Entity: International Federation of Medical Students' Associations stading committee on Research Exchange. LORE-IFMSA
City of entity: Zaragoza, Spain
Number of tutored students: 6
Type of entity: Healthcare Institutions

Teaching experience in courses and seminars for university teacher training

- 1 **Type of event:** Workshop
Name of the event: Cerca del cero absoluto: Física a bajas y muy bajas temperaturas : Refrigeradores de ciclo cerrado y metrología cuántica: máxima precisión al alcance de todos.
Organising entity: Cursos de Verano del Escorial , Madrid
Teaching date: 09/07/2008
- 2 **Type of event:** Workshop
Name of the event: Nuevas Fronteras en Magnetismo: Técnicas Macroscópicas en Magnetismo
Organising entity: Cursos de Verano de Jaca
Teaching date: 02/07/2008
Type of entity: University

Other activities/achievements not included above

- 1 **Description of the activity:** Servicio de Instrumentación Científica, Área de Instrumentación Electrónica: Responsable de la formación de un Técnico Especialista (puesto subvencionado según Resolución de 18 de diciembre de 2007, de la Secretaría de Estado de Universidades e Investigación, ref. PTA-2007-0586-I, T.E: Angel Lara)
City of activity: Zaragoza, Spain
Organising entity: Universidad de Zaragoza
End date: 2010
Type of entity: University
- 2 **Description of the activity:** Servicio de Líquidos Criogénicos: Responsable de la formación de un Titulado Medio (puesto subvencionado según Resolución de 18 de diciembre de 2007, de la Secretaría de Estado de Universidades e Investigación, ref. PTA-2007-0464-I, Ing. Téc.: Marta Castrillo)
City of activity: Zaragoza, Spain
Organising entity: Universidad de Zaragoza
End date: 2010
Type of entity: University
- 3 **Description of the activity:** Relajación Magnética en Imanes permanentes. Desarrollo de Instrumentación y Estudio Experimental.Trabajos Académicamente Dirigidos (TAD)
City of activity: Zaragoza, Spain



Organising entity: Universidad de Zaragoza
End date: 2009

Type of entity: University

4 Description of the activity: Relajación Magnética en Imanes permanentes. Desarrollo de Instrumentación Y Estudio Experimental. Trabajos Académicamente Dirigidos (TAD)

City of activity: Zaragoza, Spain

Organising entity: Universidad de Zaragoza. Dpto Física de la Materia Condensada

End date: 2008

5 Description of the activity: Servicio de Instrumentación Científica, Área de Medidas Magnéticas: Responsable de la formación de un Titulado Superior (puesto subvencionado según Resolución de 12 de abril de 2004, de la Secretaría de Estado de Política Científica y Tecnológica, ref. PTA-2003-01-90051, Dra. Ana Arauzo)

City of activity: Zaragoza, Spain

Organising entity: Universidad de Zaragoza

End date: 2006

Scientific and technological experience

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

- 1 Name of the project:** Radiación de Sincrotrón y materiales: Investigación básica y aplicaciones (RASMIA).
Geographical area: Regional
Entity where project took place: Centro de Investigación y Tecnología Agroalimentaria de Aragón
City of entity: Zaragoza, Spain
Name principal investigator (PI, Co-PI....): 1; Fernando Bartolomé
Name of the programme: Gobierno de Aragón
Code according to the funding entity: E12-17R
Start-End date: 01/01/2017 - 31/12/2019
Total amount: 44.650 €
- 2 Name of the project:** PIE 201860E076. GESTIÓN DE PATENTES, WORKSHOPS, Y REUNIONES CIENTÍFICO-TÉCNICAS (CON LA EMPRESA LICENCIATARIA Y CLIENTES) SOBRE LAS NUEVAS TECNOLOGÍAS DE RECUPERACIÓN, PURIFICACIÓN Y LICUEFACCIÓN DE HELIO DESARROLLADAS EN EL ICMA.
Entity where project took place: CSIC
City of entity: Zaragoza, Spain
Name principal investigator (PI, Co-PI....): Conrado Rillo
Start-End date: 01/06/2018 - 31/12/2018
Total amount: 21.628 €
- 3 Name of the project:** PIE 201760E005. CRIOSENSORES NANOFLUÍDICOS PARA LA DETERMINACIÓN DEL LÍMITE DE PUREZA DEL HELIO LÍQUIDO. EL PROBLEMA DE LA CONTAMINACIÓN CON HIDRÓGENO
Entity where project took place: CSIC
Name principal investigator (PI, Co-PI....): Conrado Rillo
Start-End date: 01/01/2017 - 31/12/2018



Total amount: 39.893,42 €

- 4** **Name of the project:** Criosensores nanofluidicos para la determinación del límite de pureza del helio líquido. El problema de la contaminación con hidrógeno. IP: Javier Sesé MAT2015-64083-R
City of entity: Zaragoza, Aragon, Spain
Name principal investigator (PI, Co-PI....): Javier Sesé; Conrado Rillo
Funding entity or bodies:
Ministerio de Economía y Competitividad
Start-End date: 31/12/2015 - 31/12/2018
Total amount: 100.000 €
- 5** **Name of the project:** Dispositivos moleculares (MOLDEV)
Name principal investigator (PI, Co-PI....): Marco Evangelisti
Funding entity or bodies:
MINECO MAT 2012-38318-C03-01 (proyecto coordinador)
Start-End date: 01/01/2013 - 31/12/2015 **Duration:** 2 years - 11 months - 30 days
Participating entity/entities: : Instituto universitario de investigacion en nanociencia de Aragón. Universidad Zaragoza; CSIC.ICMA; ICM-Barcelona
Total amount: 115.000 €
- 6** **Name of the project:** DGA E-34: Grupo de Excelencia IMANA
Funding entity or bodies:
Gobierno de Aragón **Type of entity:** Body, others
Start-End date: 2015 - 2015
Total amount: 7.510 €
- 7** **Name of the project:** Desarrollo de nuevas tecnologías de recuperación, purificación y licuefacción de helio adaptadas a hospitales, empresas y centros de investigación
Name principal investigator (PI, Co-PI....): Javier Sesé Monclús
Nº of researchers: 2
Funding entity or bodies:
Ministerio de Economía y Competitividad, INNPACTO IPT-2012-0442-420000
Start-End date: 2012 - 2015 **Duration:** 3 years
Participating entity/entities: INTEGRACION Y CONTROL; Universidad de Zaragoza
Total amount: 985.877 €
- 8** **Name of the project:** DGA E-34 : Grupo de Excelencia IMANA
Funding entity or bodies:
Gobierno de Aragón **Type of entity:** Body, others
Start-End date: 2014 - 2014
Total amount: 8.828 €
- 9** **Name of the project:** DGA E34: Grupo de Excelencia IMANA
Funding entity or bodies:
Gobierno de Aragón **Type of entity:** Body, others
Start-End date: 2013 - 2013
Total amount: 6.515 €



- 10 Name of the project:** DGA E34: Grupo de Excelencia IMANA
Funding entity or bodies:
Gobierno de Aragón **Type of entity:** Body, others
Start-End date: 2012 - 2012
Total amount: 10.912 €
- 11 Name of the project:** Suministro e instalación de licuefactores de Helo talla S para equipos RMN en el campus San Francisco y para equipos de Bajas Temperaturas en el edificio I+D Campus Río Ebro
Name principal investigator (PI, Co-PI....): Conrado Rillo Millán
Funding entity or bodies:
Gobierno de Aragón **Type of entity:** Body, others
Start-End date: 2010 - 2012 **Duration:** 2 years
Total amount: 560.000 €
- 12 Name of the project:** Suministro, instalación y puesta en marcha de un magnetómetro magneto-óptico con microscopio de efecto Kerr DMO-NM3
Name principal investigator (PI, Co-PI....): Conrado Rillo Millán
Funding entity or bodies:
DGA- MINECO UNZA10-4E-1003
Start-End date: 2010 - 2012 **Duration:** 2 years
Total amount: 480.000 €
- 13 Name of the project:** DGA E34: Grupo de Excelencia IMANA
Funding entity or bodies:
Gobierno de Aragón **Type of entity:** Body, others
Start-End date: 2011 - 2011
Total amount: 11.243 €
- 14 Name of the project:** MOLCHIP: Criosensores para chips moleculares y otras aplicaciones
Name principal investigator (PI, Co-PI....): INA: Javier Sesé; ICMA: F. Luis; ICN: D. Ruiz
Funding entity or bodies:
MAT 2009-13977-03
MICINN (Ministerio de Ciencia e Innovación)
Start-End date: 01/01/2009 - 31/12/2010 **Duration:** 2 years
Total amount: 420.000 €
- 15 Name of the project:** DGA E34: Grupo de Excelencia IMANA
Funding entity or bodies:
Gobierno de Aragón **Type of entity:** Body, others
Start-End date: 2010 - 2010
Total amount: 20.202 €
- 16 Name of the project:** Desarrollo y transferencia de un permeámetro de amplitud y de los procedi mientos de caracterización magnética de flejes de acero utilizados en el apantallamiento inductivo de cables para trenes AVE
Name principal investigator (PI, Co-PI....): Conrado Rillo Millán
Nº of researchers: 3
Funding entity or bodies:



CICYT PETRI:PET2006-254

Start-End date: 01/08/2007 - 02/02/2009

Duration: 1 year - 5 months - 29 days

Total amount: 40.416 €

17 Name of the project: DGA E34: Grupo de Excelencia IMANA

Funding entity or bodies:

Gobierno de Aragón

Type of entity: Body, others

Start-End date: 2009 - 2009

Total amount: 32.984 €

18 Name of the project: Desarrollo de un licuefactor de Helio líquido basado en refrigeradores de tipo Gifford-McMahon (GM) y de tubo de pulso (PT)

Name principal investigator (PI, Co-PI....): Conrado Rillo Millán

Funding entity or bodies:

Universidad Zaragoza-CSIC INF2007-CIEN-003A

Start-End date: 2007 - 2009

Duration: 2 years

Total amount: 300.000 €

19 Name of the project: Imanes macroscópicos y Nanoestructurados II

Name principal investigator (PI, Co-PI....): Juan Bartolomé

Nº of researchers: 8

Funding entity or bodies:

CICYT MAT 2005/ 1272

Start-End date: 31/12/2005 - 31/12/2008

Duration: 3 years - 1 day

Total amount: 412.930 €

20 Name of the project: DGA E34: Grupo de Excelencia IMANA

Funding entity or bodies:

Gobierno de Aragón

Type of entity: Body, others

Start-End date: 2008 - 2008

Total amount: 26.458 €

21 Name of the project: DGA E-34 : Grupo de Excelencia IMANA

Funding entity or bodies:

Gobierno de Aragón

Type of entity: Gobierno de Aragón

City funding entity: Spain

Start-End date: 2007 - 2007

Total amount: 17.980,24 €

22 Name of the project: Desarrollo integrado de herramientas (Geológicas, Geofísicas, Geomorfológicas y Geotécnicas) para la detección y predicción de hundimientos kársticos.

Name principal investigator (PI, Co-PI....): Jose Luis Simón López

Nº of researchers: 28

Funding entity or bodies:

Gobierno de Aragón

Type of entity: Universidad de Zaragoza, CONTROL 7, GEOSCAN

City funding entity: Spain

Start-End date: 01/11/2004 - 01/11/2006



Participating entity/entities: CONTROL 7; GEOSCAN; Universidad de Zaragoza
Total amount: 30.000 €

23 Name of the project: DGA: E-34 Grupo de Excelencia IMANA

Funding entity or bodies:

Gobierno de Aragón

Type of entity: Body, others

Start-End date: 2006 - 2006

Total amount: 14.164,89 €

24 Name of the project: DGA E-34, Grupo de Excelencia IMANA

Name principal investigator (PI, Co-PI...): Juan Bartolomé Sanjoaquín

Funding entity or bodies:

Gobierno de Aragón

Type of entity: Body, others

Start-End date: 2005 - 2005

Total amount: 14.164,89 €

25 Name of the project: Imanes macroscópicos y nanométricos (IMANA)

Name principal investigator (PI, Co-PI...): Juan Bartolomé

Nº of researchers: 8

Funding entity or bodies:

CSIC-MCYT MAT2002-00166

Start-End date: 2002 - 2005

Duration: 3 years

Total amount: 191.400 €

26 Name of the project: DGA: E-34 Grupo de Excelencia IMANA

Funding entity or bodies:

Gobierno de Aragón

Type of entity: Body, others

Start-End date: 2004 - 2004

Total amount: 19.001,19 €

27 Name of the project: Renovación y ampliación del Servicio de Medidas Magnéticas

Name principal investigator (PI, Co-PI...): Conrado Rillo

Funding entity or bodies:

Universidad de Zaragoza- CSIC (PAI 2004)

Start-End date: 2003 - 2004

Duration: 1 year

Total amount: 580.000 €

28 Name of the project: DGA E34: Grupo de Excelencia IMANA

Name principal investigator (PI, Co-PI...): Juan Bartolomé Sanjoaquín

Nº of researchers: 7

Funding entity or bodies:

CENTRO DE ACUSTICA APLICADA Y
EVALUACION NO DESTRUCTIVA

Type of entity: Associations and Groups

City funding entity: Gobierno de Aragón

Start-End date: 2003 - 2003

Duration: 1 year

Total amount: 22.893 €



- 29** **Name of the project:** Fabricación y caracterización de cintas compuestas de BSCCO y plata para aplicaciones eléctricas de potencia
Name principal investigator (PI, Co-PI....): Rafel Navarro
Funding entity or bodies:
CICYT MAT99-1028
Start-End date: 1999 - 2002 **Duration:** 3 years
Total amount: 63.707 €
- 30** **Name of the project:** Diseño y construcción de Comparadores Criogénicos de Corriente óptimos y su detector SQUID para aplicaciones en metrología cuántica eléctrica
Name principal investigator (PI, Co-PI....): Conrado Rillo
Funding entity or bodies:
CICYT MAT 98-0668
Start-End date: 1998 - 2000 **Duration:** 2 years
Total amount: 94.959 €
- 31** **Name of the project:** Network of Excellence on Superconductivity 22804 SCENET
Name principal investigator (PI, Co-PI....): Rafael Navarro
Funding entity or bodies:
C.E.E.-ESPRIT Program
Start-End date: 1996 - 1999 **Duration:** 3 years
Total amount: 114.970 €
- 32** **Name of the project:** Estudio del estado mixto en Superconductores de alta Tc
Name principal investigator (PI, Co-PI....): Francisco Lera
Funding entity or bodies:
CICYT MAT95-0921-C02-02
Start-End date: 1995 - 1998 **Duration:** 3 years
Total amount: 78.131 €
- 33** **Name of the project:** Optimización del patrón cuántico de resistencia: Estudio experimental de la corriente de ruptura del Efecto Hall
Name principal investigator (PI, Co-PI....): Conrado Rillo
Funding entity or bodies:
CICYT MAT 95-1541
Start-End date: 1995 - 1998 **Duration:** 3 years
Total amount: 75.419 €
- 34** **Name of the project:** Desarrollo de fabricación de sistemas de interés en electricidad de potencia basados en materiales superconductores cerámicos. Subproyecto: Desarrollo y fabricación de cintas basadas en superconductores de alta temperatura crítica
Name principal investigator (PI, Co-PI....): Germán de la Fuente
Funding entity or bodies:
CICYT-Red Eléctrica (93/2331)
Programas MIDAS
Start-End date: 1993 - 1996 **Duration:** 3 years
Total amount: 6.010 €



- 35** **Name of the project:** Flux pinning in High Temperature superconductors
Name principal investigator (PI, Co-PI....): Rafael Navarro
Funding entity or bodies:
C.E.E.
Programa Human Capital and Movility
network CHRX-CT93-0138
Start-End date: 1993 - 1996 **Duration:** 3 years
Total amount: 114.970 €
- 36** **Name of the project:** Subproyecto: Desarrollo y fabricación de cintas basadas en superconductores de alta temperatura crítica.
Name principal investigator (PI, Co-PI....): Félix Yndurain; subproyecto: Germán de la Fuente Leis
Funding entity or bodies:
Programa MIDAS (CICYT- Red Eléctrica- UNESA) nº 93-2331
Start-End date: 1993 - 1996 **Duration:** 3 years
- 37** **Name of the project:** Structural, electronic and magnetic properties of R-M intermetallic compounds and their interstitial I (H,N,C) doped derivatives
Name principal investigator (PI, Co-PI....): Juan Bartolomé; Rafel Alcalá
Funding entity or bodies:
CEE-CEAM III grupo M15
Start-End date: 1992 - 1995 **Duration:** 3 years
Total amount: 120.202 €
- 38** **Name of the project:** Medida de corrientes inductivas y de transporte
Name principal investigator (PI, Co-PI....): Conrado Rillo
Funding entity or bodies:
CICYT MAT92-0896-C02-02
Start-End date: 1992 - 1995 **Duration:** 3 years
Total amount: 150.583 €
- 39** **Name of the project:** Estudio de sistemas texturados metal/superconductor de alta temperatura
Name principal investigator (PI, Co-PI....): Rafael Navarro
Funding entity or bodies:
CICYT MAT 92-0896-C02
Start-End date: 1992 - 1994 **Duration:** 2 years
Total amount: 199.536 €
- 40** **Name of the project:** Propiedades magnéticas y eléctricas de compuestos intermetálicos y superconductores cerámicos conformados
Name principal investigator (PI, Co-PI....): Juan Bartolomé
Nº of researchers: 10
Funding entity or bodies:
CICYTMAT91-0487
Start-End date: 1991 - 1993 **Duration:** 2 years
Total amount: 91.954 €



- 41** **Name of the project:** Investigación de las propiedades magnéticas de imanes permanentes
Name principal investigator (PI, Co-PI....): Daniel Fruchart; Juan Bartolomé
Funding entity or bodies:
Programa Internacional de Cooperación Científica (CNRS-CSIC) (P.I.C.S.)
Start-End date: 1992 - 1992
Total amount: 30.050 €
- 42** **Name of the project:** Desarrollo de un patrón de resistencia basado en el efecto Hall cuántico y aplicaciones de la superconductividad
Name principal investigator (PI, Co-PI....): Conrado Rillo
Funding entity or bodies:
CICYT - Red Eléctrica - UNESA. 91/759 y 92/1591
Start-End date: 1991 - 1992
Duration: 1 year
Total amount: 386.240 €
- 43** **Name of the project:** Proyecto experimental de sistema de alimentación regenerativa de bobinas superconductoras
Name principal investigator (PI, Co-PI....): M.A Rodriguez Borra; Conrado Rillo; A; Martínez; J.Tamarit; L. García
Funding entity or bodies:
Ministerio de Industria-CICYT-Red Eléctrica-UNESA. Dirección General de Electrónica y Nuevas Tecnologías. Ref 708/91
Start-End date: 1991 - 1992
Duration: 1 year
Total amount: 468.789 €
- 44** **Name of the project:** Flux pinning in high temperature superconductors
Name principal investigator (PI, Co-PI....): Rafael Navarro
Funding entity or bodies:
PROYECTO EUROPEO "SCIENCE" SCI-0389-C
Start-End date: 1990 - 1992
Duration: 2 years
Total amount: 114.970 €
- 45** **Name of the project:** Determinación experimental de corrientes y campos críticos en muestras superconductoras de la familia Bi-Sr-Ca-Cu-O puestas en forma para aplicaciones tecnológicas e industriales
Name principal investigator (PI, Co-PI....): Rafael Navarro
Funding entity or bodies:
PROYECTO CICYT-Red Eléctrica-UNESA. Programa MIDAS
Start-End date: 1988 - 1992
Total amount: 97.484,16 €
- 46** **Name of the project:** Diseño y construcción de un magnetómetro de alta sensibilidad basado en superconductores cerámicos a temperatura de nitrógeno líquido
Name principal investigator (PI, Co-PI....): Conrado Rillo
Funding entity or bodies:
CICYT-Red Eléctrica-UNESA. 90/641
Start-End date: 1990 - 1991
Duration: 1 year
Total amount: 30.050 €



- 47** **Name of the project:** Investigación fundamental de monocristales superconductores de alta temperatura crítica
Name principal investigator (PI, Co-PI....): Conrado Rillo Millán
Funding entity or bodies:
CICYT MAT90-1174-CE
Start-End date: 1990 - 1991 **Duration:** 1 year
Total amount: 30.050 €
- 48** **Name of the project:** Fundamental physics on single crystals of high Tc superconductors
Name principal investigator (PI, Co-PI....): Conrado Rillo Millán:ICMA-CSIC. Coordinador: M. Cyrot; CNRS; Grenoble
Funding entity or bodies:
PROYECTO EUROPEO "SCIENCE". CEE SC1-0036-F
Start-End date: 1988 - 1991 **Duration:** 3 years
Total amount: 96.161,9 €
- 49** **Name of the project:** Termomagnetismo de compuestos intermetálicos y superconductores de alta temperatura crítica
Name principal investigator (PI, Co-PI....): Juan Bartolomé
Funding entity or bodies:
CICYTMAT88-01
Start-End date: 1988 - 1991 **Duration:** 3 years
Total amount: 114.733 €
- 50** **Name of the project:** Thermomagnetic and magnetoelastic study of RE-Fe-B compounds
Name principal investigator (PI, Co-PI....): Juan Bartolomé. Agustín del Moral
Nº of researchers: 12
Funding entity or bodies:
CEE CEAM II,
Grupo M-25
Start-End date: 1988 - 1991 **Duration:** 3 years
Total amount: 63.707,2 €
- 51** **Name of the project:** Intercomparison of magnetic measurements on Permanent Magnets
Name principal investigator (PI, Co-PI....): Conrado Rillo Millán
Nº of researchers: 5
Funding entity or bodies:
CEE-BCR
Start-End date: 1990 - 1990
- 52** **Name of the project:** Taller de Técnicas Electrónicas
Name principal investigator (PI, Co-PI....): Conrado Rillo Millán
Funding entity or bodies:
Proyecto de Infraestructura DGICYTOP89-0122
Start-End date: 1990 - 1990
Total amount: 97.964 €



- 53** **Name of the project:** Materiales magnéticos a bajas temperaturas
Name principal investigator (PI, Co-PI....): Juan Bartolomé
Funding entity or bodies:
Programa Internacional de Cooperación Científica (CNRS-CSIC) (P.I.C.S.). 630/15
Start-End date: 1988 - 1990 **Duration:** 2 years
Total amount: 120.202 €
- 54** **Name of the project:** Estudio magnético y termodinámico de nitruros, fosfuros y arseniuros de metales de transición”
Name principal investigator (PI, Co-PI....): Juan Bartolomé; Daniel Fruchart
Funding entity or bodies:
Acción Integrada Hispano-Francesa AI74/218
Start-End date: 1986 - 1988 **Duration:** 2 years
- 55** **Name of the project:** Thermomagnetic and magnetoelastic study of RE-Fe-B compounds
Name principal investigator (PI, Co-PI....): Juan Bartolomé; Agustín del Moral; R. Navarro
Nº of researchers: 8
Funding entity or bodies:
CEE
Concerted European Action on Magnets (CEAM I) Grupo nº 1.13
Start-End date: 1985 - 1988 **Duration:** 3 years
- 56** **Name of the project:** Horno de levitación por inducción
Name principal investigator (PI, Co-PI....): Conrado Rillo Millán
Funding entity or bodies:
PROYECTO DE INFRAESTRUCTURA P.R.A.E. 87 **Type of entity:** State agency
C.S.I.C.
Start-End date: 1987 - 1987
Total amount: 30.050 €
- 57** **Name of the project:** Estudio de transiciones de fase a bajas temperaturas mediante susceptibilidad dinámica y microcalorimetría
Name principal investigator (PI, Co-PI....): Juan Bartolomé
Nº of researchers: 7
Funding entity or bodies:
CAICYT 3380/83-83
Start-End date: 1984 - 1987 **Duration:** 3 years
- 58** **Name of the project:** The d.c. SQUID project
Name principal investigator (PI, Co-PI....): Jaap Flokstra
Funding entity or bodies:
Proyecto F.O.M. (Holanda)
Start-End date: 1984 - 1985 **Duration:** 1 year
- 59** **Name of the project:** Characterization of transparent magnetic materials of the type
Name principal investigator (PI, Co-PI....): Juan Bartolomé; M.Cardona; J.M. Calleja
Funding entity or bodies:
Proyecto Fundación Volkswagen AZ 1/37098/1



Start-End date: 1982 - 1985

Duration: 3 years

Total amount: 64.300 €

60 Name of the project: Ampliación del equipamiento científico del servicio de instrumentación Científica-Area de medidas físicas: I I Plataforma PPMS de 14 Tesla

Name principal investigator (PI, Co-PI....): Conrado Rillo Millán

Funding entity or bodies:

MICINN (Ministerio de Ciencia e Innovación)

UNZA08-4E-007

Start date: 2008

Total amount: 34.504.896 €

61 Name of the project: Ampliación del equipamiento científico del servicio de instrumentación Científica-Area de medidas físicas: I Magnetómetro Squid

Name principal investigator (PI, Co-PI....): Conrado Rillo Millán

Funding entity or bodies:

MICINN (Ministerio de Ciencia e Innovación) UNZA08-4E-003

Start date: 2008

Total amount: 30.169.638 €

62 Name of the project: Renovación y ampliación de magnetómetro SQUID

Name principal investigator (PI, Co-PI....): Conrado Rillo

Funding entity or bodies:

Centro de Investigación y Tecnología Agroalimentaria **Type of entity:** Public Research Body de Aragón

Start date: 2001

Total amount: 36.060 €

63 Name of the project: Modernización y mejora del Servicio de Instrumentación Electrónica. Equipos para fabricación de circuitos impresos y desarrollo de microprocesadores

Name principal investigator (PI, Co-PI....): Conrado Rillo

Funding entity or bodies:

CICYT IN94-0513

Start date: 1994

Total amount: 111.187 €

R&D non-competitive contracts, agreements or projects with public or private entities

1 Name of the project: New method to filter and regenerate Helium with the ATP 30. Helium Recovery Plant Contamination Assessment & Management Plan

Entity where project took place: Quantum Design Inc, San Diego, USA

Entity where project took place: Quantum Design Inc, San Diego, USA

City of entity: Zaragoza, Spain

Name principal investigator (PI, Co-PI....): Conrado Rillo

Code according to the funding entity: OTRI 2015/0128-16

Start date: 01/01/2016

Duration: 2 years

Total amount: 54.141 €



- 2** **Name of the project:** Technical Assistance on Helium Recovery Plant Installations in Europe
Degree of contribution: OTRI2014/0373
Name principal investigator (PI, Co-PI....): Conrado Rillo.
Participating entity/entities: Universidad de Zaragoza - LOT-QUANTUMDESIGN
Funding entity or bodies:
Lot/ QD/GMBH
Start date: 01/01/2014 **Duration:** 2 years
Total amount: 9.453 €
- 3** **Name of the project:** Research activities for the development of technologies regarding liquefaction, recovery and purification helium plants. New method to filter and regenerate Helium with the ATP 30. Helium Recovery Plant Contamination Assessment & Management Plan. Referencia: OTRI 2015/128-OTRI 2012/275-OTRI 2011/232 Empresa: Quantum Design Inc, San Diego (USA) Investigador principal: Conrado Rillo (ICMA)
Start date: 15/04/2012 **Duration:** 3 years
Total amount: 470.000 €
- 4** **Name of the project:** Patent License Agreement: P200930904 Y P201030658 and "know how" about Advanced Helium Liquefaction Plants. Entidad Financiadora: QUANTUM DESIGN, INC
City of entity: Zaragoza, Spain
Name principal investigator (PI, Co-PI....): Conrado Rillo
Start date: 01/01/2011
Total amount: 910.388 €
- 5** **Name of the project:** Modernización de patrones de Referencia Cuánticos y Adaptación de Procedimientos de Calibración y Cálculo de incertidumbres conforme a Norma.
Name principal investigator (PI, Co-PI....): Conrado Rillo.
Nº of researchers: 4
Funding entity or bodies:
OTRI-Universidad de Zaragoza-2008/0731 y TecnoEbro: VIGS-001-2008
TPYCEA (Ministerio de Defensa)
Start date: 18/12/2008 **Duration:** 9 months - 12 days
Total amount: 73.000 €
- 6** **Name of the project:** Análisis de resultados experimentales y contribución al diseño de protecciones electromagnéticas de cables de señalización. Desarrollo y transferencia de un permeámetro de amplitud y de los procedimientos de caracterización magnética de flejes de acero utilizados en el apantallamiento de Cables de trenes AVE. Referencia: OTRI2013/150, OTRI2007/0260, PETRI PET2006-254 Empresa: Cables de Comunicaciones, Zaragoza. Investigador principal: Conrado Rillo (ICMA)
Degree of contribution: Researcher
Name principal investigator (PI, Co-PI....): Conrado Rillo.
Nº of researchers: 3
Funding entity or bodies:
Cables de Comunicaciones Zaragoza, S.L. **Type of entity:** Business
City funding entity: Zaragoza, Aragon, Spain
Start date: 01/05/2007 **Duration:** 5 years
Total amount: 100.000 €



- 7** **Name of the project:** Modernización del Patrón Cuántico de Referencia Absoluta para Tensión en Corriente Continua Basado en el Efecto Josephson
Name principal investigator (PI, Co-PI....): Conrado Rillo.
Nº of researchers: 4
Funding entity or bodies:
OTRI- Universidad de Zaragoza- 2006/541
TPYCEA (Ministerio de Defensa)
Start date: 2006 **Duration:** 2 years
Total amount: 264.154,97 €
- 8** **Name of the project:** Caracterización magnética dinámica de aceros de alta permeabilidad utilizados en apantallamientos de cables de señalización para trenes AVE. Tipo de contrato :Convenio Universidad de Zaragoza-Cables de Comunicaciones S.L. Referencia: CICYT-Proyecto PETRI PET2006-254, Univ. Zaragoza-CSIC
Name principal investigator (PI, Co-PI....): Conrado Rillo.
Nº of researchers: 4
Participating entity/entities: Cables de Comunicaciones S.I.; Servicio de Instrumentación; Universidad de Zaragoza
Funding entity or bodies:
Cables de Comunicaciones
Start date: 01/11/2005 **Duration:** 1 year
Total amount: 48.000 €
- 9** **Name of the project:** Optimización y automatización de dos Comparadores Criogénicos de Corriente
Name principal investigator (PI, Co-PI....): Conrado Rillo.
Funding entity or bodies:
OTRI -Universidad de Zaragoza- 2003/366
TPYCEA (Ministerio de Defensa)
Start date: 2003 **Duration:** 2 years
Total amount: 180.000 €
- 10** **Name of the project:** Magnetic permeability measurements on Stainless samples for LHC .
Name principal investigator (PI, Co-PI....): Conrado Rillo
Funding entity or bodies:
DMV Stainless Italia.
Start date: 2001 **Duration:** 2 years
Total amount: 45.000 €
- 11** **Name of the project:** Magnetic permeability measurements on Stainless steel samples for LHC
Funding entity or bodies:
CERN
Start date: 2000 **Duration:** 3 years
Total amount: 15.000 €
- 12** **Name of the project:** Transferencia de un CCC transportable al TPYCEA
Name principal investigator (PI, Co-PI....): Conrado Rillo.
Funding entity or bodies:
Contrato TPYCEA-OTRI Zaragoza.



Start date: 2000
Total amount: 6.010 €

13 Name of the project: Detección de fugas en criostatos horizontales para el LHC.

Funding entity or bodies:
OTRI-FELGUERA construcciones mecánicas. 97/0126

Start date: 1998
Total amount: 6.010 €

14 Name of the project: Detección de fugas en criostatos toroidales del experimento ALTAS-LHC. (CERN)

Name principal investigator (PI, Co-PI...): Agustín Camón Lasheras; Conrado Rillo Millán

Funding entity or bodies:
OTRI-FELGUERA construcciones mecánicas.2000/0059

Start date: 1998
Total amount: 6.010 €

15 Name of the project: Desarrollo de prototipos electrónicos para minusválidos

Name principal investigator (PI, Co-PI...): Conrado Rillo.

Funding entity or bodies:
OTRI-MECATRAF.

Start date: 1997
Total amount: 15.025,3 €

Duration: 2 years

16 Name of the project: Estudio por elementos finitos de actuadores electromagnéticos

Funding entity or bodies:
SAI-BOVINADOS Y TRANSFORMADORES S.L.

Start date: 1997
Total amount: 3.005 €

Duration: 1 year

17 Name of the project: Fabricación y optimización de fibras y otros materiales superconductores para el desarrollo de limitadores de corriente

Name principal investigator (PI, Co-PI...): Germán de la Fuente; Luis Alberto Angurel

Funding entity or bodies:
Red Eléctrica de España. (93/2331)

Start date: 1997
Total amount: 1.000 €

Duration: 1 year

18 Name of the project: QHE measurements at high fields and low temperatures

Name principal investigator (PI, Co-PI...): Conrado Rillo.

Funding entity or bodies:
EUROMET 270

Start date: 1996
Relevant results: viajes y dietas

Duration: 2 years

19 Name of the project: AMAS 500. SMES de 1 MJ

Name principal investigator (PI, Co-PI...): Conrado Rillo.

Funding entity or bodies:
Convenio ASINEL-OTRI. 94/0132



Start date: 1995

Duration: 3 years

Total amount: 47.840 €

20 Name of the project: Comparación de medida para asegurar la trazabilidad del patrón de FEM de 10V basado en el Efecto Josephson

Name principal investigator (PI, Co-PI....): Conrado Rillo.

Funding entity or bodies:

Contrato TPYCEA-OTRI ZARAGOZA.

Start date: 1995

Duration: 1 year

Total amount: 30.000 €

21 Name of the project: Ensayos del prototipo de criostato para un SMES de 1 MJ. Diseño final del criostato

Name principal investigator (PI, Co-PI....): Conrado Rillo.

Funding entity or bodies:

ASINEL-OTRI . 94/0132

Start date: 1995

Duration: 3 years

22 Name of the project: Diseño y proyecto de un criostato refrigerado por helio, para alojar una bobina superconductora de almacenamiento de energía de 25 KJ.

Name principal investigator (PI, Co-PI....): Conrado Rillo.

Funding entity or bodies:

Convenio ASINEL-OTRI.

Start date: 1994

Duration: 1 year

Total amount: 12.000 €

23 Name of the project: Estudio de Materiales por Difracción neutrónica y radiación de sincrotrón. "MANES"

Name principal investigator (PI, Co-PI....): Juan Bartolomé

Nº of researchers: 8

Funding entity or bodies:

CSIC-CNRS-Universidad de Zaragoza- Universidad de Joseph Fourier. LEA-MANES

Start date: 1993

Duration: 3 years

Total amount: 30.000 €

24 Name of the project: Measurement of magnetic properties at low temperatures

Funding entity or bodies:

OTRI (CERN) 93/0027

Start date: 1993

Duration: 7 years

Total amount: 12.000 €

25 Name of the project: Contribución al desarrollo de un patrón de resistencia basado en efecto Hall cuántico para uso metrológico

Funding entity or bodies:

Convenio Universidad de Zaragoza-Dirección General de Armamento y Material-Pro- grama MIDAS. Ref.170/03

Start date: 1992

Duration: 2 years

Total amount: 12.000 €



26 Name of the project: Adquisición de datos y control de calidad en una instalación de montaje de reactancias y transformadores

Name principal investigator (PI, Co-PI....): Conrado Rillo Millán

Funding entity or bodies:

Contrato Fundación Empresa-Universidad de Zaragoza FEUZ nº 193868 (Financiado por COBRA Electrónica

S.A)

Start date: 1988

Duration: 1 year

Total amount: 6.000 €

27 Name of the project: Desarrollo de un patrón de fuerza electromotriz basado en el efecto Josephson

Name principal investigator (PI, Co-PI....): Conrado Rillo Millán

Nº of researchers: 5

Funding entity or bodies:

PROYECTO DE COOPERACION D.G.A.M.-C.S.I.C. ST2P-0458-C(EDB) (Financiado por Ministerio de defensa)

Start date: 1988

Duration: 4 years

Total amount: 330.556 €

Results

Industrial and intellectual property

1 Title registered industrial property: System and method for recovery and recycling coolant gas at elevated pressure

Inventors/authors/obtainers: C; Tocado L.; Reineman R.; Warburton R.

Entity holder of rights: CSIC 33%, UNIZAR 33%, GWR 33%

Nº of application: US14/821608

Country of inscription: United States of America

Date of register: 07/08/2015

Conferral date: 23/06/2020

2 Title registered industrial property: Cryocooler suitable for gas liquefaction applications, gas liquefaction system and method comprising the same

Inventors/authors/obtainers: Conrado Rillo; Javier Sesé

Entity holder of rights: CSIC 50%, UNIZAR 50%

Nº of application: EP18382340.0

Date of register: 17/05/2018

Companies: Quantum Design Inc., Patent License Agreement, March 2, 2011

3 Title registered industrial property: System and Method for Improving the Liquefaction Rate in Cryocooler-Based Cryogen Gas Liquefiers

Inventors/authors/obtainers: Conrado Rillo; Javier Sesé

Entity holder of rights: CSIC 25%, UNIZAR 75%

Nº of application: EP16382300.8, US15/627863, JP16382300.8, IN201744021548, CA2969978

Date of register: 24/06/2016

Licences: Yes

Companies: Quantum Design Inc., Patent License Agreement, March 2, 2011



- 4 Title registered industrial property:** Apparatus and Method for Purifying Gases and Method for Regenerating the Same.
Inventors/authors/obtainers: Rillo C.; Diederichs J.; Simmonds M.
Entity holder of rights: CSIC 33.3%, UZ 33,3%, QUANTUM DESIGN INC. 33.3%
Nº of application: US 14/496,821, EP14196895.8, CA20152899802, JP20140262714 (Granted), CN2015189174.
Date of register: 25/09/2014
Companies: Quantum Design Inc., Patent License Agreement, March 2, 2011
- 5 Title registered industrial property:** Gas Liquefaction System and Method
Inventors/authors/obtainers: Rillo C.; Tocado L.; Warburton R.; Reineman R.
Entity holder of rights: CSIC 33%, UZ 33%, GWR 33%
Nº of application: PCT/US2011/034842, Granted: EP11720246.5, US13/801960, JP20130509151, CN2011833
Date of register: 03/05/2010
Companies: Quantum Design Inc., Patent License Agreement, March 2, 2011
- 6 Title registered industrial property:** Helium Recovery Plant
Inventors/authors/obtainers: Rillo C.; Tocado L.
Entity holder of rights: CSIC 50%, UNIZAR 50%
Nº of application: Granted: ES200930904, PCT/ES2010/070632, EP10837077.6, US13/452630, JP201205358, CN2010848560
Date of register: 26/10/2009
PCT patent: Yes
Companies: Quantum Design Inc., Patent License Agreement, March 2, 2011

Technological results derived from specialized and transfer activities, not included in previous sections

- 1 Description:** Análisis de Resultados Experimentales y Contribución al Diseño de Protecciones Electromagnéticas de Cables de Señalización
Collaborating entity or bodies: Cables de Comunicaciones Zaragoza, S.L. **Type of entity:** Business
Start date: 2013
- 2 Description:** Contrato de Asistencia Técnica: " ATL Direct Recovery plant test. ATP30 and ATL160 He purification and liquefaction plant installation at Air Liquide " Alphagaz
Collaborating entity or bodies: Al Air Liquide España, S.A. **Type of entity:** Business
City collaborating entity: Madrid, Community of Madrid, Spain
Start date: 2013 **Duration:** 1 year
- 3 Description:** PATENT LICENSE AGREEMENT. P200930904, P201030658 y "know how" sobre "Advanced Helium Liquefaction Plants"
Collaborating entity or bodies: Quantum Design
City collaborating entity: United States of America
Start date: 2011 **Duration:** 20 years



- 4** **Description:** Research Activities For The Development of Technologies Regarding Liquefaction Recovery and Purification Helium Plants
Collaborating entity or bodies:
Quantum Design
City collaborating entity: United States of America
Start date: 2011 **Duration:** 1 year
- 5** **Description:** Caracterización magnética dinámica de aceros de alta permeabilidad utilizados en apantallamientos de cables de señalización para trenes AVE.
Collaborating entity or bodies:
Cables de Comunicaciones Zaragoza, S.L. **Type of entity:** Business
City collaborating entity: Zaragoza, Aragon, Spain
Start date: 2005 **Duration:** 4 years
- 6** **Description:** Comparador Criogénico de Corriente Transportable
Name of the principal Investigator (PI): J. Sesé
Name of the Co-principal investigator (Co-PI): C. Rillo
Degree of contribution: Researcher
Start date: 2002
Relevant results: Transportable resistance bridge based on the Cryogenic Current Comparator E. Bartolomé, A. Camón, J. Sesé, C. Rillo, J. Flokstra, G. Rietveld. IEEE Trans. Appl. Supercon vol. 11, part 1.1 March 2001, pp 867-87
- 7** **Description:** Comparador Criogénico de Corriente
Name of the principal Investigator (PI): J. Sesé
Name of the Co-principal investigator (Co-PI): C. Rillo
Degree of contribution: Researcher
Collaborating entity or bodies:
Taller de Precisión y Centro Electrotécnico de Artillería (TPYCEA) **Type of entity:** otros
City collaborating entity: Madrid, Community of Madrid, Spain
Start date: 1994
Relevant results: Superconductivity in Spain: Research activities. Editado por F. Yndurain. Programa MIDAS, 432-452 (1993)
- 8** **Description:** Patronajes de Voltaje y resistencia basados en los Efectos " Josephson" y "Hall Cuántico"
Name of the principal Investigator (PI): Agustín Camón
Name of the Co-principal investigator (Co-PI): Conrado Rillo
Degree of contribution: Researcher
Collaborating entity or bodies:
Taller de Precisión y Centro Electrotécnico de Artillería (TPYCEA) **Type of entity:** otros
City collaborating entity: Madrid, Community of Madrid, Spain
Start date: 1992 **Duration:** 2 years
Relevant results: Superconductivity in Spain: Research activities. Editado por F. Yndurain. Programa MIDAS, 437-452 (1993)



- 9** Quantum Design Inc.; GWR Instrument Inc.; Universidad de Zaragoza; CSIC. Need Liquid Helium?. Revista: Physics Today (New product announcement). 65 - 9, pp. 2. 2012.
Type of production: Scientific paper
- 10** Alonso PJ; Arauzo AB; García-Monforte MA; García-Rubio I.; Martín A.; Babil Menjón and Rillo C.. Synthesis, characterisation and magnetic properties of octahedral chromium (III) compounds with six C - donor ligands. Dalton Transaction.40, pp. 853 - 861. .2011.
Type of production: Scientific paper **Format:** Journal
- 11** Alonso PJ; Arauzo AB; García-Monforte MA; Menjon B; Rillo C.. Sigma- Organoniobium Compounds whit [Nb R4] (-) and NbR4 Stoichiometries. Angewandte Chemie International Edition. 49, pp. 6143 - 6146. .2010.
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- 90** Ibañez R.; M.J. Sanchis; F. Sapiña; D. Beltrán; A. Beltrán; G.F. de la Fuente; C. Rillo; J. Bartolomé; F. Lera; R. Navarro. Transport and diamagnetic properties of 2:2:1:2 and 2:2:2:3 (Bi-Pb)-Sr-Ca-Cu-O superconducting materials. *Materials Research Society Symposium Proceedings* 169, 1057-1060 (1990). 169, pp. 1057 - 1060. 1990.
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- 138** Algarabel P.A.; J.I. Arnaudas; J. Bartolomé; J. Chaboy; A. del Moral; J.M. Fernández; M.R. Ibarra; C. Marquina; R. Navarro; C. Rillo.. Magnetostriction and low field magnetization processes in RE₂Fe₁₄B compounds."Concerted European Action on Magnets (CEAM)".pp. 258. 1989.
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Works submitted to national or international conferences

- 1** **Title of the work:** An experimental set-up to study the blockage problem in the flow of liquid helium (LHe) in small impedances
Name of the conference: XXXVII REUNION BIENAL DE LA REAL SOCIEDAD ESPAÑOLA DE FÍSICA
Type of event: Conference
City of event: Zaragoza, Spain
Date of event: 15/07/2019
End date: 19/07/2019
Organising entity: RSEF
ALEX CHUQUITARQUI; MIGUEL GABAL; JAVIER SESE; MARTA CASTRILLO; CONRADO RILLO.
- 2** **Name of the conference:** II Congreso de Materiales para los retos de la Sociedad
Type of participation: Participatory - others
City of event: Zaragoza, Spain
Date of event: 03/02/2018
Organising entity: Instituto de Ciencia de Materiales de Aragón
- 3** **Title of the work:** A fast and easy to use device for testing the quality of liquid helium
Name of the conference: XGEFES2018 MEETING
Type of event: Conference
City of event: Valencia, Spain
Date of event: 24/01/2018
End date: 26/02/2018
Organising entity: Real Sociedad Española de Física
Conrado Rillo Millán; Miguel Gabal Lanau; Javier Sesé Monclús.
- 4** **Name of the conference:** XXXVI Reunión Bienal de la Real Sociedad Española de Física
Type of participation: Participatory - others
City of event: Santiago de Compostela, Spain
Date of event: 03/02/2017
Organising entity: Real Sociedad Española de Física
- 5** **Title of the work:** ¿ Es el Helio Líquido una sustancia pura?
Name of the conference: II Congreso de Materiales para los retos de la Sociedad
City of event: Jaca, Spain
Date of event: 02/02/2017
End date: 03/02/2017
Organising entity: Instituto Pirenaico de Ecología **Type of entity:** State agency
Conrado Rillo.
- 6** **Title of the work:** Cryocooler-based Helium Recovery Plant for Applications Requiring Gas or Liquid with Extreme Purity [W08-6]
Name of the conference: International Cryocooler Conference (ICC19)
Type of participation: Participatory - oral communication
City of event: San Diego, United States of America
Date of event: 20/06/2016
End date: 23/07/2016
M. Gabal; C. Rillo; J. Sesé; J. Diederichs; G. Rayner; S. Spagna.



- 7** **Title of the work:** Smart Energy Compressors for Helium Liquefiers
Name of the conference: ICC15
City of event: Siracusa, Italy
Date of event: 09/06/2016
End date: 12/06/2016
C. Chialvo; T. Sayles; J. Diederichs; S. Spagna; M. Gabal; J. Sesé; C. Rillo.
- 8** **Title of the work:** Magnetic Interactions between d1 [MOR4] - units of Molybdenum and Tungsten
Name of the conference: SCTE2016
City of event: Zaragoza, Spain
Date of event: 12/04/2016
End date: 15/11/2016
Organising entity: Universidad de Zaragoza **Type of entity:** University
M. Ángeles García-Monforte; Pablo Alonso; Ana B. Arauzo García; Miguel Baya; Fernando Luis; Antonio Martin; Babil Menjon; Conrado Rillo.
- 9** **Title of the work:** Helio Líquido "Verde"
Type of participation: Participatory - oral communication
City of event: Instituto de Magnetismo Aplicado de Renfe,
Date of event: 22/01/2016
City organizing entity: Madrid,
Conrado Rillo Millán.
- 10** **Title of the work:** Purification of recovered Helium with low level of impurities: evaluation of two different methods"
Name of the conference: ICEC/ICMC 2014
Type of participation: 'Participatory - poster
City of event: Twente, Netherlands,
Date of event: 07/07/2014
End date: 11/07/2014
M.P. Lozano; M. Gabal; J. Sesé; M.P. Pina; C. Rillo.
- 11** **Title of the work:** Helium contamination through polymeric wals
Name of the conference: ICEC/ICMC 2014
Type of participation: 'Participatory - poster
City of event: Twente, Netherlands,
Date of event: 07/07/2014
End date: 11/07/2014
M. Gabal; M.P. Lozano; A. Oca; M.P. Pina; J. Sesé; C. Rillo.
- 12** **Title of the work:** 10th International Workshop on Magnetism and Superconductivity at the Nanoscale. Comarruga-2014
Name of the conference: Need Liquid Helium
Type of participation: Participatory - oral communication
City of event: Comarruga, Spain
Date of event: 30/06/2014
Conrado Rillo Millán.



- 13** **Title of the work:** Advanced Technologies in He recovery and liquefying
Name of the conference: Complex Materials: Magnetic and Electric Characterization at Low Temperatures
Type of participation: Participatory - oral communication
City of event: Instituto de Ciencia de Materiales de Barcelona, Spain
Date of event: 25/11/2013
City organizing entity: Barcelona, Conrado Rillo Millán.
- 14** **Title of the work:** Need Liquid Helium?
Name of the conference: Academy-Industry Matching Event. Fostering Collaborations in superconductivity
Type of participation: Participatory - invited/keynote talk
City of event: CIEMAT, Madrid, Spain
Date of event: 27/05/2013
End date: 28/05/2013
Conrado Rillo Millán.
- 15** **Title of the work:** The ATL History and Secrets
Type of participation: Participatory - invited/keynote talk
City of event: Facultad de Ciencias Físicas, Universidad Complutense de Madrid,
Date of event: 27/05/2013
Conrado Rillo Millán.
- 16** **Title of the work:** New Solutions for Helium Recovery Systems
Type of participation: Participatory - invited/keynote talk
City of event: Barcelona, Spain
Date of event: 26/03/2013
Organising entity: ALBA
Conrado Rillo Millán and David Appel.
- 17** **Title of the work:** ATL (Advanced Technology Liquefier) Secrets
Type of participation: Participatory - invited/keynote talk
City of event: San Diego, United States of America
Date of event: 16/10/2012
Organising entity: Quantum Design Inc.
Conrado Rillo Millán.
- 18** **Name of the conference:** Applied Superconductivity Conference
Type of participation: Participatory - others
City of event: Portland, United States of America
Date of event: 07/10/2012
End date: 12/10/2012
- 19** **Name of the conference:** International Cryocooler Conference 15
Type of participation: Participatory - others
City of event: Long Beach EEUU,
Date of event: 09/06/2008
End date: 12/06/2008
- 20** **Title of the work:** Propiedades magnéticas de sistemas 3d6 y 3d7 con geometría plano cuadrada
Name of the conference: V Reunión del Grupo Especializado de Física del estado Sólido (GEFES).
Type of participation: 'Participatory - poster



City of event: Santiago de Compostela Fecha: Febrero del 2008,
Date of event: 2008
García-Monforte M.A.; Menjón B.; Arauzo A.B; Rillo C.; Alonso P.J.

- 21** **Title of the work:** Semi Automated dc-Squid based CCC bridge for precision resistance measurements at the Spanish Typeca
Name of the conference: Conference on Precision Electromagnetic Measurements
Type of participation: 'Participatory - poster
City of event: Colorado, United States of America
Date of event: 2008
. A. Cerrudo; J. Sesé; L.Gómez; A. Camón; F. Mendoza; E. Garijo and C.Rillo. "Precision Electromagnetic Measurements Digest ,2008 ,".
- 22** **Name of the conference:** Jornadas de Magnetismo Industrial
Type of participation: Participatory - others
City of event: Barcelona Fecha: 26-27 de Octubre 2006,
Date of event: 26/10/2006
End date: 27/10/2006
City organizing entity: Spain
- 23** **Title of the work:** 1:30000 cryogenic current comparator with optimum squid readout
Name of the conference: Conference on Precision Electromagnetic Measurements.
Type of participation: Participatory - oral communication
City of event: Toronto, Canada
Date of event: 2002
E. Bartolomé; J. Sesé; G. Rietveld; J. Flokstra; C. Rillo; A. Camón; H. Rogalla."Precision Electromagnetic Measurements Digest, 2002,". pp. 280 - 281.
- 24** **Title of the work:** Magnetic relaxation phenomena in R₂Fe₁₇ (R=Y, Dy, Er, Ho) and C and H derivatives
Name of the conference: 8th International Symposium on Metal-Hydrogen Systems, Fundamentals and Applications (MH2002)
Type of participation: Participatory - oral communication
City of event: ANNECY,
Date of event: 2002
Bartolome J; Mukherjee S; Rillo C; Plugaru N; Piquer C. "JOURNAL OF ALLOYS AND COMPOUNDS 356: 208-210, AUG 11 2003".
- 25** **Title of the work:** Simplified calculus for the design of a cryogenic current comparator
Name of the conference: Conference on Precision Electromagnetic Measurements
Type of participation: 'Participatory - poster
City of event: Toronto, Canada
Date of event: 2002
E. Bartolomé; J. Sesé; G. Rietveld; J. Flokstra; C. Rillo; A. Camón; H. Rogalla."Precision Electromagnetic Measurements Digest,2002 ,". pp. 336 - 337.
- 26** **Title of the work:** Integration of a Cryogenic current comparator with optimum readout to a SQUID
Name of the conference: European Conference on Applied Superconductivity.
Type of participation: 'Participatory - poster
City of event: Copenhagen, Denmark
Date of event: 2001
J. Sesé; G. Rietveld; E. Bartolomé. P. Grunder; A. Camón; C. Rillo and J. Flokstra."Abstrac book.".



- 27** **Title of the work:** Superconducting applications in Quantum Metrology: The magic steps
Name of the conference: 4ºCurso Intensivo ERASMUS sobre "Materiales Avanzados"
Type of participation: Participatory - invited/keynote talk
City of event: Zaragoza, Spain
Date of event: 1999
C. Rillo.
- 28** **Name of the conference:** European Conference on Applied Superconductivity.
Type of participation: Organizational - Scientific and organizing committee
City of event: Sitges, Spain
Date of event: 1999
C.Rillo.
- 29** **Title of the work:** CCC inductances calculation: Validity of the image method
Name of the conference: CPEM'98. Conference on Precision Electromagnetic Measurements
Type of participation: 'Participatory - poster
City of event: Washington, United States of America
Date of event: 1998
J. Sesé; A. Delil; F. Lera; A. Camón and C. Rillo.
- 30** **Title of the work:** Intermediate Frustration in [Fe₃O(CH₃COO)₆(H₂O)₃]NO₃.4(H₂O) Trinuclear Cluster
Name of the conference: European Magnetic Materials and Applications (EMMA'98)
Type of participation: 'Participatory - poster
City of event: Zaragoza, Spain
Date of event: 1998
G. Filoti; J. Bartolomé; D.P.E.Dickson; C.Rillo; I. Prisecaru; T. Jovmir; V.Kuncser; C. Turta."Journal Magnetism Magnetic Materials".
- 31** **Title of the work:** Low input coil inductance SQUID for Cryogenic Current Comparator applications
Name of the conference: Applied Superconductivity Conference.
Type of participation: 'Participatory - poster
City of event: Palm Desert,
Date of event: 1998
J. Sesé; A. Camón; C. Rillo; M.G.H. Hiddink; L. Vargas; M.J. van Duuren; G.C.S. Brons; J. Flokstra; H. Rogalla and G. Rietveld.
- 32** **Title of the work:** One hundred years of metrology at the spanish TPYCEA
Name of the conference: CPEM'98. Conference on Precision Electromagnetic Measurements
Type of participation: 'Participatory - poster
City of event: Washington, United States of America
Date of event: 1998
City organizing entity: United States of America
M. López; M. Castro; J.L.Quesada; F. Mendoza; C. Rillo; A.Camón; J. Sesé and M.T. Sánchez Carazo.
- 33** **Title of the work:** Spin reorientation phenomena in the NdYFe_{14-x}CoxB system
Name of the conference: European Magnetic Materials and Applications (EMMA'98).
Type of participation: 'Participatory - poster
City of event: Zaragoza, Spain
Date of event: 1998



A.T. Pedziwiatr; M. Artigas; B. F. Bogacz; R. Wielgosz; J. Rubín; J. Bartolomé; C. Rillo; J. F. Fernandez."J.Magn. Magn. Mater."

- 34** **Title of the work:** Zero-current voltage oscillations and non-linear transport in Quantum hall GaAs-AlGaAs heterostructures
Name of the conference: CPEM'98.Conference on Precisión Electromagnetic Measurements.
Type of participation: 'Participatory - poster
City of event: Washington, United States of America
Date of event: 1998
J. Sesé; A. Camón; C. Rillo; J. Blanchet; F. Piquemal and G. Genevès.
- 35** **Title of the work:** QHE and CCC results at ICMA-TPYCEA
Name of the conference: EUROMET QHE and JAVS Experts Meeting.
Type of participation: Participatory - oral communication
City of event: Lisboa, Portugal
Date of event: 1997
C. Rillo; A.Camón; J. Sesé; F. Bartolomé.
- 36** **Title of the work:** Microstructure and Critical Currents in composite BSCCO Fibres obtained by the Laser Floating Zone Method
Name of the conference: Electroceramics V
Type of participation: 'Participatory - poster
City of event: Aveiro, Portugal
Date of event: 1996
C. Díez; L.A. Angurel; H. Miao; G.F. de la Fuente; J.I. Peña E. Martínez; F. Lera; C. Rillo; R. Navarro.

Works submitted to national or international seminars, workshops and/or courses

- 1** **Title of the work:** Clean Liquid Helium
Name of the event: ATL user workshop
Type of event: Seminar
City of event: Zaragoza, Spain
Date of event: 23/10/2018
Organising entity: Lot-QuantumDesign, ICMA
City organizing entity: Darmstadt, Germany
Conrado Rillo Millán.
- 2** **Title of the work:** New ATL developments
Name of the event: ATL user workshop
Type of event: Seminar
City of event: Zaragoza, Spain
Date of event: 23/10/2018
Organising entity: Lot-QuantumDesign, ICMA
City organizing entity: Darmstadt, Germany
Conrado Rillo Millán.
- 3** **Title of the work:** Is liquid helium an absolutely "pure liquid"? The purity of liquid helium revisited
Type of event: Seminar
Reasons for participation: Upon invitation
City of event: Sensuicho, Japan



Date of event: 24/02/2018

Organising entity: Kyushu Institute of Technology
Conrado Rillo Millán.

4 Title of the work: Is liquid helium an absolutely “pure liquid”? The purity of liquid helium revisited

Type of event: Seminar

Reasons for participation: Upon invitation

City of event: Nishiikebukuro Fujita Bldg2F, 1-11-16 Takamatsu, Japan

Date of event: 23/02/2018

Organising entity: Quantum Design Japan
Conrado Rillo Millán.

5 Title of the work: New Joint Development Program: Next Generation of Advanced Technology Liquefiers.

Type of event: Seminar

Reasons for participation: Upon invitation

City of event: Tokyo, Japan

Date of event: 23/02/2018

Organising entity: Sumitomo Heavy Industries
Conrado Rillo Millán.

Other dissemination activities

1 Title of the work: El Helio lo es todo

Name of the event: SEMANA DE INMERSIÓN EN CIENCIAS 2019

City of event: Zaragoza, Spain

Date of event: 10/06/2019

Organising entity: Facultad de Ciencias, Universidad de Zaragoza
Conrado Rillo.

2 Title of the work: Helio Líquido y los nuevos desarrollos realizados en Zaragoza

Type of event: Conferences given

Geographical area: Regional

City of event: Zaragoza, Spain

Date of event: 26/02/2019

Organising entity: Instituto de Ciencia de Materiales **Type of entity:** University Research Institute de Aragón
Conrado Rillo Millán.

3 Title of the work: Helio Líquido y los nuevos desarrollos realizados en Zaragoza

Type of event: Conferences given

Geographical area: Regional

City of event: Zaragoza, Spain

Date of event: 26/02/2019

Conrado Rillo Millán.

4 Title of the work: Recuperación de Helio con empresa Internacional Americana y Japonesa

Name of the event: Transfiere, 8º Foro Europeo para la Ciencia, Tecnología e Innovación

Geographical area: European Union

Reasons for participation: Upon invitation

Corresponding author: Yes

City of event: Málaga, Spain

Date of event: 13/02/2019



Conrado Rillo Millán.

- 5** **Title of the work:** Helio Líquido, el líquido más frío que existe, " made in Aragón"
Name of the event: Ciclo de Conferencia: ¿ qué sabemos de...charlas con el CSIC de Zaragoza
Type of event: Conferences given **Geographical area:** Regional
Reasons for participation: Upon invitation
Corresponding author: Yes
City of event: Zaragoza, Spain
Date of event: 22/10/2018
Organising entity: Obra Social Ibercaja
City organizing entity: Zaragoza, Spain
Conrado Rillo Millán.
- 6** **Title of the work:** El Helio lo es todo
Name of the event: SEMANA DE INMERSIÓN EN CIENCIAS 2018
City of event: Zaragoza, Spain
Date of event: 11/06/2018
Organising entity: Facultad de Ciencias, Universidad de Zaragoza
Conrado Rillo.
- 7** **Title of the work:** El Helio lo es todo
Reasons for participation: Upon invitation
City of event: Calanda, Spain
Date of event: 26/03/2018
Organising entity: I.E.S Valle del Guadalope
Conrado Rillo Millán.
- 8** **Title of the work:** El Helio lo es todo
Name of the event: Programa Cineforum
Type of event: Conferences given
Reasons for participation: Upon invitation
City of event: Zaragoza, Spain
Date of event: 25/10/2017
Organising entity: Unidad de Cultura Científica de la Universidad de Zaragoza, Aula del Hospital Infantil Miguel Servet, Zaragoza
Conrado Rillo.
- 9** **Name of the event:** SEMANA DE INMERSION EN CIENCIAS 2017
Type of event: CONFERENCIAS **Geographical area:** Regional
Reasons for participation: Upon invitation
City of event: ZARAGOZA, Spain
Date of event: 12/06/2017
Organising entity: Universidad Zaragoza
CONRADO RILLO.
- 10** **Title of the work:** De la necesidad y el problema hasta el producto comercial: Helio líquido ultrapuro al alcance de todos
Reasons for participation: Upon invitation
City of event: Zaragoza,
Date of event: 07/06/2017
Organising entity: ATENEO de la EINA



City organizing entity: Zaragoza, Spain

- 11 Title of the work:** Hidrógeno y Helio: inseparables en el Universo pero incompatibles en la Tierra
Name of the event: Actividades Culturales 2016-2017
Reasons for participation: Upon invitation
City of event: Zaragoza,
Date of event: 25/05/2017
Organising entity: Club Cultural 33, La Salle Gran Vía
- 12 Title of the work:** Investigación y Transferencia de Tecnología a OPIs y Empresas
Name of the event: PROGRAMA EXPERTIA
Reasons for participation: Upon invitation
City of event: Zaragoza,
Date of event: 25/05/2017
Organising entity: Universidad de Zaragoza **Type of entity:** University
City organizing entity: Zaragoza, Spain
- 13 Title of the work:** Is Liquid Helium an Absolutely "pure liquid"?
Name of the event: Nanociencia y Nanotecnología: lo pequeño es diferente
Type of event: Conferences given
Reasons for participation: Upon invitation
Corresponding author: Yes
City of event: Cantoblanco,
Date of event: 21/02/2017
Organising entity: FUNDACIÓN IMDEA NANOCIENCIA
- 14 Title of the work:** El Helio lo es todo
Name of the event: Programa Cineforum
Reasons for participation: Upon invitation
City of event: Zuera, Spain
Date of event: 10/02/2017
Conrado Rillo.
- 15 Title of the work:** Cuatro Casos de Éxito, Transferencia de Tecnología a OPIs y Empresas
Name of the event: PROGRAMA EXPERTIA
City of event: Zaragoza,
Date of event: 04/04/2016
Organising entity: Universidad de Zaragoza **Type of entity:** University
- 16 Title of the work:** Cuatro Casos de Éxito, Transferencia de Tecnología a OPIs y Empresas
Name of the event: PROGRAMA EXPERTIA
Reasons for participation: Upon invitation
City of event: Zaragoza,
Date of event: 25/02/2016
Organising entity: Universidad de Zaragoza
City organizing entity: Zaragoza, Spain
Conrado Rillo.
- 17 Title of the work:** El Helio lo es todo
Type of event: Conferences given
Reasons for participation: Upon invitation



City of event: Daroca, Spain

Date of event: 12/11/2015

Organising entity: programa "Revista la Oca Loca", charla en el centro penitenciario de Daroca
Conrado Rillo.

18 Title of the work: Patentar...o... acerca de cómo Generar Beneficios del Conocimiento y viceversa

Name of the event: PROGRAMA EXPERTIA

Type of event: Conferences given

Reasons for participation: Upon invitation

City of event: Zaragoza,

Date of event: 18/05/2015

Organising entity: Escuela de Ingeniería y Arquitectura, EINA

City organizing entity: Zaragoza, Spain

Conrado Rillo.

19 Title of the work: El Helio lo es todo

Name of the event: Programa Cineforúm

Type of event: Conferences given

Reasons for participation: Upon invitation

City of event: Zaragoza, Spain

Date of event: 11/03/2015

Organising entity: Unidad de Cultura de la Universidad de Zaragoza, Aula del Hospital Miguel Servet de Zaragoza

Conrado Rillo.

20 Title of the work: Nuevas Técnicas Criogénicas

Name of the event: Planes de Formación del Personal de Administración y Servicios

City of event: Zaragoza,

Date of event: 23/06/2014

Organising entity: Universidad de Zaragoza

Type of entity: University

Conrado Rillo.

21 Title of the work: El Helio lo es todo

Name of the event: V Taller del Documental Científico,

City of event: Zaragoza, Spain

Date of event: 13/03/2014

Organising entity: Unidad de Cultura Científica de la Universidad de Zaragoza, FECYT

Conrado Rillo.

22 Title of the work: V Taller de guión y producción del documental científico

Name of the event: Actividades dirigidas al profesorado universitario

City of event: Zaragoza, Spain

Date of event: 13/03/2014

23 Name of the event: V Taller de guión y producción del documental científico

City of event: Zaragoza, Spain

Date of event: 13/03/2014

24 Title of the work: Generando Beneficios del Conocimiento

Type of event: Conferences given

Reasons for participation: Upon invitation



Corresponding author: Yes

City of event: Zaragoza,

Date of event: 2014

Organising entity: Colegio La Salle-Gran Vía. Club Cultural 33

City organizing entity: Zaragoza, Spain

Conrado Rillo.

- 25** **Title of the work:** Cursos de Formación de Air Liquide
Name of the event: Centro de Distribución Alphagaz para Iberia. Villaverde Alto. Madrid. Curso sobre Tecnologías avanzadas de Licuefacción (2 horas). Formación de personal comercial sobre Helio líquido, propiedades del líquido, manejo de recipientes y transporte
City of event: Madrid, Spain
Date of event: 19/12/2013
- 26** **Name of the event:** Jornadas de Puertas Abiertas
Type of event: Colaborador
City of event: Zaragoza,
Date of event: 25/06/2013
Organising entity: Universidad de Zaragoza, Facultad de Ciencias
- 27** **Title of the work:** Senda Abierta a la Recuperación del He: El oro líquido del siglo XXI
Type of event: Conferences given
Corresponding author: Yes
City of event: Zaragoza,
Date of event: 26/05/2013
Organising entity: Club Cultural 33, La Salle Gran Vía
- 28** **Name of the event:** III Circuitos Científicos de la Universidad de Zaragoza
City of event: Zaragoza, Spain
Date of event: 12/05/2013
Organising entity: Programa de Ciencia Viva del Gobierno de Aragón
- 29** **Title of the work:** Tecnologías avanzadas de recuperación, licuefacción almacenamiento y transporte de He
Name of the event: Complex Materials: Manetic and Electric Characterization at low temperatures
City of event: Bellaterra, Barcelona,
Date of event: 2013
Organising entity: Universitat de Barcelona
Type of entity: University
1; Conrado Rillo.
- 30** **Title of the work:** Participación como coordinador en las semanas de inmersión en la investigación
City of event: United States of America
Date of event: 15/06/2012
Organising entity: Facultad de Ciencias- Univ. de Zaragoza
City organizing entity: Zaragoza,
- 31** **Title of the work:** Participación como coordinador en las semanas de inmersión en la investigación
City of event: Spain
Date of event: 17/06/2011
Organising entity: Facultad de Ciencias- Univ. de Zaragoza



- 32** **Title of the work:** Instituto de Ciencia de Materiales de Aragón
Name of the event: Acercando la Investigación a la Sociedad
Date of event: 13/05/2011
Organising entity: Colegio Santa María del Pilar, Marianistas
City organizing entity: Zaragoza, Spain
- 33** **Title of the work:** Gases y Líquidos Criogénicos, principios básicos
Name of the event: Curso de Formación de la Universidad de Zaragoza
City of event: Zaragoza, Spain
Date of event: 09/05/2011
- 34** **Title of the work:** De las sustancias puras a los materiales del siglo XXI
Name of the event: Proyecto de Divulgación : Del centro de investigación a la sociedad
City of event: Zaragoza,
Date of event: 15/12/2009
Organising entity: Universidad de Zaragoza **Type of entity:** University
- 35** **Name of the event:** Jornadas de Puertas Abiertas
Type of event: Coordinador
Date of event: 30/11/2009
- 36** **Title of the work:** Participación como coordinador en las semanas de inmersión en la investigación
Date of event: 19/06/2009
Organising entity: Facultad de Ciencias- Univ. de Zaragoza
City organizing entity: Zaragoza, Spain
- 37** **Title of the work:** Participación como Coordinador
Name of the event: Semana de la Ciencia
City of event: Zaragoza,
Date of event: 28/11/2008
Conrado Rillo.
- 38** **Title of the work:** Criogenia y Líquidos Criogénicos: Formación General
Name of the event: Cursos de Formación de la Universidad de Zaragoza
City of event: Zaragoza, Spain
Date of event: 27/10/2008
Organising entity: Universidad de Zaragoza **Type of entity:** University
- 39** **Title of the work:** Participación como coordinador en las semanas de inmersión en la investigación
City of event: Zaragoza, Spain
Date of event: 20/06/2008
Organising entity: Facultad de Ciencias- Univ. de Zaragoza
- 40** **Name of the event:** Participación en la Semana Europea de la Ciencia
Corresponding author: Yes
City of event: Facultad de Ciencias- Univ. de Zaragoza,
Date of event: 2008
- 41** **Title of the work:** Participación como Coordinador
Name of the event: Semana de la Ciencia
Date of event: 29/11/2007



Conrado Rillo.

- 42 Title of the work:** Asistencia
Name of the event: Jornadas de Magnetismo Industrial
Type of event: Asistencia
Date of event: 27/10/2006
Organising entity: Club Español de Magnetismo
Conrado Rillo.

R&D management and participation in scientific committees

Scientific, technical and/or assessment committees

- 1 Committee title:** Jurado de los premios de Física Real Sociedad Española de Física-Fundación BBVA 2016
End date: 26/09/2016
- 2 Committee title:** Miembro del Jurado de los premios de Física Real Sociedad Española de Física-Fundación BBVA 2016.
End date: 26/09/2016
- 3 Committee title:** Comité Técnico COST de Física
Affiliation entity: CEE
Start-End date: 1995 - 2004

Organization of R&D activities

- 1 Title of the activity:** Servicios de Apoyo a la Investigación: Área de Medidas Físicas. (CSIC-Universidad de Zaragoza)
Type of activity: Responsable Científico
Start-End date: 1997 - 2012
- 2 Title of the activity:** Servicios de Apoyo a la Investigación: Área de Instrumentación Electrónica. (Universidad de Zaragoza)
Type of activity: Responsable Científico
Start-End date: 1985 - 2012
- 3 Title of the activity:** Departamento de Física del Estado Sólido a Bajas Temperaturas (ICMA)
Type of activity: Director
Start-End date: 2002 - 2008
- 4 Title of the activity:** Mesa Redonda titulada " Física en y para la empresa"
Type of activity: Moderador
Geographical area: Non EU International
Convening entity: RSEF
City convening entity: Zaragoza, Aragon, Spain
Start date: 15/07/2019



- 5 Title of the activity:** Servicio General de Apoyo a la Investigación (SAI)
Type of activity: División de caracterización Física y Química (Infraestructuras cofinanciadas CSIC-Universidad de Zaragoza. Director de División. Servicios de Rayos X, Microscopia Electrónica, Medidas Físicas y Análisis Químico.
City convening entity: Zaragoza, Spain
Start date: 01/07/2012
- 6 Title of the activity:** 18th International Workshop on High Performance Magnets and their Applications
Type of activity: Comité del Programa **Geographical area:** Non EU International
Start date: 2004
- 7 Title of the activity:** Servicios de Apoyo a la Investigación: Servicio de Líquidos Criogénicos
Type of activity: Responsable Científico:(Infraestructuras cofinanciadas CSIC-Universidad de Zaragoza)
Convening entity: Universidad Zaragoza
City convening entity: Zaragoza, Spain
Start date: 01/01/2002
- 8 Title of the activity:** European Conference on Applied Superconductivity
Type of activity: Miembro del Comité de Organización Local **Geographical area:** Internacional
Start date: 1999
- 9 Title of the activity:** European Magnetic Materials and Applications (EMMA '98)
Type of activity: Miembro del Comité Organizador y Responsable del Comité Local. **Geographical area:** Internacional
Start date: 1998
- 10 Title of the activity:** SMATS 94 . Superconductividad y Materiales Superconductores (Programa Midas)
Type of activity: Miembro del Comité Científico **Geographical area:** National
Start date: 1994

Other achievements

Stays in public or private R&D centres

- 1 Entity:** University of Twente
City of entity: Enschede, Holland
End date: 2002 **Duration:** 7 days
Goals of the stay: Guest
- 2 Entity:** University of Twente
City of entity: Enschede, Holland
End date: 1999 **Duration:** 7 days
Goals of the stay: Guest
- 3 Entity:** University of Twente
City of entity: Enschede, Holland
End date: 1998 **Duration:** 7 days
Goals of the stay: Guest



- 4** **Entity:** University of Twente
City of entity: Enschede, Holland
End date: 1997 **Duration:** 7 days
Name of programme: Aplicaciones de sensores SQUID. Instrum. Electrónica. Superconductores
Goals of the stay: Guest
- 5** **Entity:** Laboratoire Central des Industries Electriques
City of entity: Fontenay aux Roses, France
End date: 1996 **Duration:** 7 days
Name of programme: Efecto Hall Cuántico
Goals of the stay: Guest

Prizes, mentions and distinctions

- 1** **Description:** PREMIO ARAGÓN INVESTIGA A ENTIDADES-INMA
Awarding entity: GOBIERNO DE ARAGÓN **Type of entity:** Gobierno regional
City awarding entity: ZARAGOZA, Aragon, Spain
Conferral date: 09/11/2021
- 2** **Description:** III Edición Premios 3º Milenio, Heraldo de Aragón. Categoría: Transferencia de Conocimiento Universidad Empresa, al Proyecto: " Helio para todos"
Awarding entity: Heraldo de Aragón **Type of entity:** University
City awarding entity: Zaragoza, Aragon, Spain
Conferral date: 02/11/2017
Recognition linked: Instituto de Ciencia de Materiales de Aragón (ICMA-CSIC) Universidad de Zaragoza, Instituto de Nanociencia de Aragón, (INA) , Servicio de Líquidos Criogénicos
- 3** **Description:** Primer Premio al mejor resultado licenciado, Concurso Elevator Pitch: Colaboración con Empresas
Awarding entity: Universidad de Zaragoza, certamen Triple Hélice
City awarding entity: Zaragoza, Spain
Conferral date: 2015
- 4** **Description:** Premio 2015 de "Física , Innovación y Tecnología"
Awarding entity: la Real Sociedad Española de Física y por la Fundación BBVA
Conferral date: 2015
Recognition linked: " desarrollado una tecnología de criogenia reconocida por empresas nacionales e internacionales, generando patentes en explotación en un campo especialmente competitivo
- 5** **Description:** Segundo premio en la 1a edición del PREMIO A LA TRANSFERENCIA DE CONOCIMIENTOS A LA EMPRESA
Awarding entity: CONSEJO SOCIAL DE LA UNIVERSIDAD DE ZARAGOZA, CREA Y CEPYME
City awarding entity: Zaragoza, Spain
Conferral date: 2009
Recognition linked: Blindaje de cables para los sistemas de enclavamiento y señalización en las líneas de trenes e Alta Velocidad" C. Rillo, J. Sesé, A. Arauzo, E. Guerrero y P. Téllez.



Periods of research activity

1 Nº of recognized periods: 1

Geographical area: National

Certifying entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** Pública

City certifying entity: MADRID, Community of Madrid, Spain

Date of recognition: 2020

2 Nº of recognized periods: 1

Geographical area: National

Certifying entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** Pública

City certifying entity: MADRID, Community of Madrid, Spain

Date of recognition: 2019

3 Nº of recognized periods: 1

Geographical area: National

Certifying entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** Pública

City certifying entity: MADRID, Community of Madrid, Spain

Date of recognition: 2014

4 Nº of recognized periods: 1

Geographical area: National

Certifying entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** Pública

City certifying entity: MADRID, Community of Madrid, Spain

Date of recognition: 2008

5 Nº of recognized periods: 1

Geographical area: National

Certifying entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** Pública

City certifying entity: MADRID, Community of Madrid, Spain

Date of recognition: 2002

6 Nº of recognized periods: 1

Geographical area: National

Certifying entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** Pública

City certifying entity: MADRID, Community of Madrid, Spain

Date of recognition: 1996

7 Nº of recognized periods: 1

Geographical area: National

Certifying entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** Pública

City certifying entity: MADRID, Community of Madrid, Spain

Date of recognition: 1990



Summary of other achievements

- 1** **Description of the achievement:** Desarrollo e implantación de nuevas técnicas de recuperación, purificación y licuefacción de Helio
Accrediting entity: Servicio de Líquido Criogénicos del Servicio General de Apoyo a la Investigación de la Universidad de Zaragoza
City accrediting entity: Zaragoza, Spain
Conferral date: 2008
- 2** **Description of the achievement:** Desarrollo, implantación y modernización de los patrones cuánticos eléctricos de voltage y resistencia
Accrediting entity: Taller de Precisión y Centro Electrotécnico de Artillería del Ministerio de Defensa
City accrediting entity: Madrid, Spain
Conferral date: 1988